Original paper

Stress and coping strategies of medical students during their first clinical practice – a pilot study

Stres i radzenie sobie ze stresem studentów kierunków medycznych podczas pierwszych zajęć klinicznych – badania wstępne

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Key words: stress, coping strategies, student, sense of self-efficacy.

Słowa kluczowe: stres, strategie radzenia sobie ze stresem, student, poczucie skuteczności.

Abstract

Introduction: The medical profession is acknowledged as one of the most stressful. The time devoted to acquire knowledge and practical skills is a source of stress for students, but also an opportunity to learn how to deal with it.
Aim of the research: To assess how medical students deal with stress during their first clinical practice.
Material and methods: The study was conducted in a group of 526 students of: nursing, physiotherapy, medical rescue, and obstetrics at a university. The research tools included: an original questionnaire, the Perceived Stress Scale, and the Stress Management Inventory. The dependence between variables was established using the Spearman's rank correlation. A significance level of $\alpha = 0.05$ was assumed in the tests.
Results: Almost half of the students experienced high levels of stress, and more than half of them manifested high levels of self-efficacy. The participants dealt with difficult situations mainly by active coping, planning, and seeking instrumental support. The paramedics and the midwives more often turned to active coping than did the physiotherapists. Younger people were more inclined to choose strategies associated with seeking support (rho = –0.134, $p = 0.001$). It was shown that strategies of managing difficult situations based on helplessness were more often followed by older people (rho = 0.126, $p = 0.002$). The greater sense of self-efficacy in the participants, the more often they chose active stress coping strategies.
Conclusions: Active stress management strategies should be developed in students also to strengthen their sense of self-efficacy.

Streszczenie

Wprowadzenie: Wykonywanie zawodów medycznych uznawane jest za jedno z najbardziej stresujących zajęć. Czas poświęcony na zdobywanie wiedzy i umiejętności praktycznych jest również źródłem stresu dla studentów kierunków medycznych, a także okazją do nauczenia się, jak sobie z nim radzić.
Cel pracy: Ocena, w jaki sposób studenci kierunków medycznych radzą sobie ze stresem podczas pierwszej praktyki klinicznej.
Materiał i metody: Badanie przeprowadzono w grupie 526 studentów: pielęgniarstwa, fizjoterapii, ratownictwa medycznego i położnictwa. Narzędzia badawcze obejmowały: autorski kwestionariusz ankiety, Skalę odczuwanego stresu i Inwentarz radzenia sobie ze stresem. Zależność między zmiennymi ustalono za pomocą korelacji rang Spearmana. W testach przyjęto poziom istotności $\alpha = 0,05$.
Wyniki: Prawie połowa studentów doświadczyła wysokiego poziomu stresu, ponad połowa z nich miała wysoki poziom poczucia własnej skuteczności. Studenci radzili sobie ze stresem poprzez aktywne zarządzanie, planowanie i poszukiwanie instrumentalnego wsparcia. Ratownicy medyczni i położne częściej podejmowali aktywne formy radzenia sobie niż fizjoterapeuci. Osoby młodsze były bardziej skłonne wybierać strategie związane z poszukiwaniem wsparcia (rho = –0,134, $p = 0,001$). Wykazano, że osoby starsze częściej stosowały strategie radzenia sobie z trudnymi sytuacjami oparte na bezradności (rho = 0,126, $p = 0,002$). Im większe było poczucie własnej skuteczności u uczestników, tym częściej wybierali oni strategie aktywnego radzenia sobie ze stresem.
Wnioski: U studentów należy rozwijać aktywne strategie radzenia sobie ze stresem, a także wzmacniać ich poczucie własnej skuteczności.

Introduction

The medical profession is acknowledged as one of the most stressful. People preparing to engage in the medical profession are affected by especially strong and abundant stress factors. The reason behind this is emotional engagement in contact with patients and responsibility for human health and life. Predispositions for performing those professions are associated with relevant personal skills and an ability to deal with stress. The first contact with one's future profession in the clinical environment is very important for students of nursing, obstetrics, medical rescue, or physiotherapy. It takes place during practical classes, which are carried out in healthcare facilities and are aimed at optimising practical and social skills. The students are perfecting such skills as: instrumental activities, interpersonal communication, cooperation with the therapeutic team, organisation of work at the ward, and implementation of tasks of therapeutic team members. Students in clinical practice are subjected to not just the academic stressors but to the same kind of stress that professionals suffer from. During these classes students realise that their chosen profession involves stress. A lot of research has confirmed the occurrence of stressful situations in the course of education of students of medical professions [1–5]. The major source of stress for the students are the practical classes in a clinical environment. That is where they have to deal with difficulties with interpersonal interactions and lack of knowledge, insecurity in the scope of nursing skills, and taking care of dying patients. Stress also results from actions undertaken in difficult and rapidly changing situations. Experiencing strong stress by the students may impact their professional future. The emotions experienced in the clinical environment are known as related to an academic adaptation and success and also to the student health and well-being. A little dose of stress is motivational, however too high stress levels disturbs learning processes The impact of stress is different for individuals depending on whether their response to stressors is negative or positive and how they recognise their stress [4, 6–8]. Dealing with stress is significant in the process of adaptation to stressful situations. Coping strategies are the specific efforts, both behavioural and psychological, that individuals employ to master, tolerate, reduce, or minimise stressful events. Active coping is considered a better way to deal with stress, while avoidance coping is considered as a psychological risk factor for adverse responses to stressful life events. The research showed that students apply various combinations of dealing with difficult situations, from avoidance behaviours to problem solving [7, 9–14]. Okumura *et al.* claimed that strategies may depend on individual stress tolerance [15]. In difficult situations students may have limited ability to cope effectively with stress. Effective stress management is an important skill for students. Perfecting this skill allows optimum efficiency in the future. Reducing the incidence of stress and burnout seems to be possible by promoting strategies that focus on personal engagement, extracurricular activities, positive reinterpretation and expression of emotion, student-led mentorship programs, evaluation systems, career counselling, and life coaching.

Aim of the research

The aim of this study was to assess stress levels, stress coping styles, and sense of self-efficacy in medical students during their first clinical practice. A stronger sense of self-efficacy and activation of mechanisms of coping with difficult situations may favour better results and satisfaction with the chosen profession. Developing and improving one's professional identity may prove helpful for medical students in managing role stress.

Material and methods

A cross-sectional descriptive study was conducted in Jagiellonian University and the State Higher Vocational School in Tarnow in 2017/2018. The research was carried out using the diagnostic questionnaire method, estimation, and the surveying technique.

The study involved 526 subjects who were first-year undergraduates of nursing, obstetrics, physiotherapy, and emergency medicine. The fieldwork was carried out after the students had completed the first block of practical training classes (at the last meeting). The students were enrolled in the study if they: 1) were studying for an undergraduate degree, 2) were in the first year of studies, 3) had completed the practical classes (no less than 80 h), and 4) had given informed consent to participate in the study. Students were given the opportunity to express their independent opinions without any conflict of interest.

The research tools included: an original questionnaire, the Perceived Stress Scale by S. Cohen, T. Kamarck, and R. Mermelstein adapted by Z. Juczyński and N. Ogińska-Bulik; an inventory to measure coping with stress by S. Charles Carver adapted by Z. Juczyński and N. Ogińska-Bulik; and the Generalised Self-Efficacy Scale by R. Schwarzer, M. Jerusalem, and Z. Juczyński [16].

The author's questionnaire consisted of questions about sociodemographic data.

The Perceived Stress Scale (PSS-10) by S. Cohen, T. Kamarck, and R. Mermelstein was used to assess the severity of the stress related to respondents' own life situation during the last month. It contained 10 questions about subjective feelings associated with personal issues and events. For each question, the respondent answered using a five-point scale from "never" – 0, to "very often" – 4. The overall score of

the scale, being the sum of points, had a theoretical distribution ranging from 0 to 40. After converting into standardised units, the results within 1–4 sten scores were treated as low, 5–6 as average, and 7–10 as high. Cronbach's α for the scale is 0.86 [16].

The inventory to measure coping with stress (Mini-COPE) was used to assess typical reactions to, and perceptions of, stress in stressful situations. The inventory comprised 28 statements included in 14 strategies of stress management, which were divided into seven factors: active management, including: active management, planning, and positive revaluation; seeking support, including: seeking emotional support and seeking instrumental support; helplessness, including use of psychoactive substances, ceasing activity, and self-accusation; and avoidance behaviours, including: getting engaged in another activity, denial, and venting off. Turning to religion, acceptance, and humour were treated as independent factors. For each claim, the participant had to choose one of four answers, from 'I almost never do that' to 'I almost always do that'. In the analysis of results problem-focused strategies were also distinguished, including: active management, planning, seeking instrumental support, and emotion-focused strategies, i.e. seeking emotional support, turning to religion, and denial.

The Generalised Self-Efficacy Scale (GSES) measured the strength of the individual's overall belief in their effectiveness in coping with difficult situations and obstacles. It consisted of 10 statements relating to different personal characteristics, which the respondent marked as true or false in their particular case. The theoretical range of the scale was 0 to 40 points. Higher scores corresponded to a higher sense of self-efficacy. The maximum number of points it was possible to obtain was within the numerical range 30–40 points, which indicated a high sense of self-efficacy, between 25–29 meant an average level, and between 10–24 points meant a low level. The scale has a moderately high criterion validity and reliability with Cronbach's alpha coefficient for the scale at 0.85 [16].

In total 642 questionnaires were distributed, of which 529 were returned, and three were rejected due to numerous shortcomings in responses. Therefore, 526 questionnaires were left for analysis and statistical work. Questionnaires received from respondents were evaluated individually and checked for completeness. Data was then coded, entered into the database, and processed using IBM SPSS Statistics 20 for Windows.

Quantitative variables were described through arithmetic mean, standard deviation, and range.

Differences between variables were tested using the chi-square independence test, Kruskal-Wallis test, and Spearman's rank correlation. The adopted level of significance was $\alpha = 0.05$.

The study was approved by the Jagiellonian University Medical College Bioethics Committee (approval no. 122.6120.193.2015).

The authors' permissions were granted for the use of all research tools. The students were informed about both the confidentiality and anonymity of the research, and that participation was voluntary, and they could refuse/withdraw from the study at any time during the study.

Results

More than half of the 562 students who participated in the study (n = 322, i.e. 57.30%) were nurses. Significantly less numerous groups were those of physiotherapists (n = 100, i.e. 17.19%), midwives (n = 80, i.e. 14.23%), and paramedics (n = 60, i.e. 10.68%).

The majority of participants (n = 494, i.e. 87.90%) were women, and 12.10% of participants (n = 68) were men. The midwives group consisted exclusively of women. 93.17% (n = 300) of nurses were women, and in the physiotherapists group 84% (n = 84) of participants were women. Only in the case of paramedics was the percentage of women and men equal. Differences in sex distribution in particular groups were statistically significant ($\chi^2 = 101.89$; $df = 3$; $p < 0.0001$).

The average age of the participants was 20.91 ±2.04 years. The youngest participant was 19 years old and the oldest was 35. Half of the participants were below 20 years old.

Most of the participants (n = 242, i.e. 43.06%) were 20 years old. 19.40% of participants (n = 109), were 21 years old, 13.70% (n = 77) – 19 years old, and 11.39% (n = 64) – 22 years old. Over 3/4 of participants (76.16%) were below 22 years old.

The average age in the group of nurses was 20.89 ±2.47 years, and the age range was 19–35 years; the average age in the group of midwives was 20.98 ±1.42 years – the youngest one was 19 years old, and the eldest was 26 years old. The average age in the group of paramedics was 20.92 ±1.14 years, and the age range was 20–25 years. In the group of physiotherapists, the average age was 20.91 ±1.20 years. The youngest physiotherapist was 19 years old, and the eldest one was 28 years old. Differences in age distribution in particular groups were not statistically significant ($\chi^2 = 22.55$; $df = 3$; $p < 0.0001$).

It was shown that in 21.00% of participants (n = 118) the level of perceived stress was low. The average stress level was experienced by 29.18% of participants (n = 164). Almost half of the participants (n = 280, i.e. 49.82%) showed a high level of perceived stress (Figure 1).

It was shown that a high level of stress was more often experienced by women (51.42%) than by men (38.24%). In the male group the level of experienced stress was more often average (38.24%) than in the female group (27.94%). However, discovered differences

between the age and level of perceived stress were not statistically significant ($p = 0.1057$) (Figure 2).

The average age (20.62 y.o.) of people with low stress level was lower than the average age (21.01 y.o.) of people with average or high (20.97 y.o.) stress levels. However, the differences between the age and level of perceived stress were not statistically significant ($p = 0.1313$).

Slight statistical differences were shown between the levels of perceived stress among the groups participating in the study. The differences in question regarded stress perception at the average level in the group of midwives (22.5%) and physiotherapists (41.00%) (Table 1).

It was shown that 9.79% of the participants ($n = 55$) displayed low levels of self-efficacy. In the case of 35.05% of people ($n = 197$) the level of self-efficacy was average. In over half of the participants ($n = 310$, i.e. 55.16%) the sense of self-efficacy was high.

People with average level of self-efficacy were more frequent among women than among men (36.03%). In the male group, there were insignificantly more people with low level of self-efficacy (14.71%). The discovered differences were not statistically significant ($p = 0.2126$) (Figure 3).

The average age of people experiencing low level of self-efficacy was insignificantly higher (21.29 y.o.) than the average age of people with average (20.75 y.o.) or high (20.94 y.o.) level of self-efficacy. The discovered differences were not statistically significant ($p = 0.0752$).

The level of self-efficacy was not significantly different between nurses, midwives, paramedics, and physiotherapists ($p = 0.1324$).

On the basis of analysis of results of the Mini COPE scale, it was shown that in difficult situations the participants most often turned to active management (2.06 ±0.63). A slightly lower number of participants chose strategies based on planning (1.98 ±0.70), seeking instrumental support (1.93 ±0.75), seeking emotional support (1.92 ±0.74), or seeking acceptance (1.81 ±0.71). Less popular, but also frequently chosen, management strategies included: engagement in another activity (1.69 ±0.76) and positive revaluation (1.68 ±0.72). To a lesser extent (significantly below the

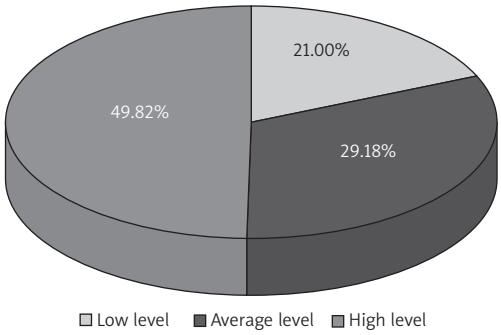

Figure 1. Stress levels in the participants

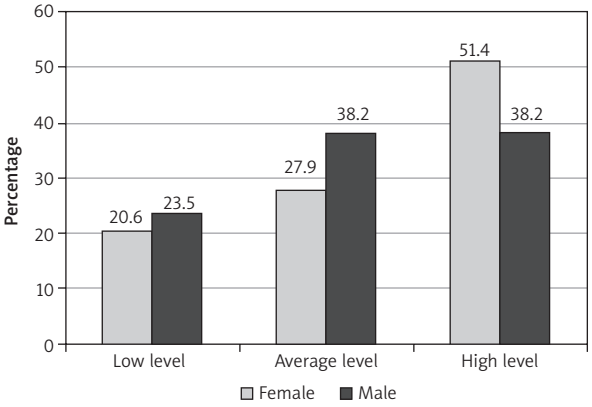

Figure 2. Stress levels and sex of the participants

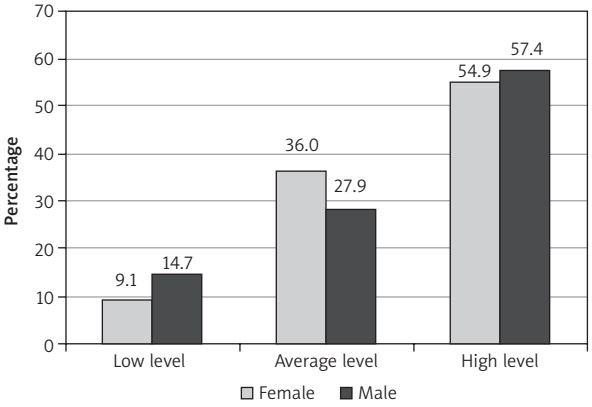

Figure 3. Self-efficacy levels and sex of the participants

Table 1. Stress levels and the group of participants ($n = 526$)

Parameter	Student group							
	Nursing		Obstetrics		Medical rescue		Physiotherapy	
	N	%	*N*	%	*N*	%	*N*	%
Low level	73	22.67	15	18.75	17	28.33	13	13.00
Average level	89	27.64	18	22.50	16	26.67	41	41.00
High level	160	49.69	47	58.75	27	45.00	46	46.00
P-value	0.0362							

Table 2. Stress coping strategies and sex of the participants (n = 526)

Sex/MiniCOPE	Female		Male		Total		*P*-value
	Mean	SD	Mean	SD	Mean	SD	
Active management	2.07	0.62	2.04	0.70	2.06	0.63	0.8016
Planning	1.98	0.70	1.96	0.66	1.98	0.70	0.7405
Positive revaluation	1.69	0.72	1.64	0.73	1.68	0.72	0.5707
Acceptance	1.83	0.71	1.63	0.70	1.81	0.71	**0.0278**
Humour	1.07	0.72	1.21	0.76	1.09	0.73	0.2164
Turning to religion	1.34	0.96	1.10	0.88	1.31	0.95	0.0517
Seeking emotional support	1.97	0.73	1.57	0.74	1.92	0.74	**0.0001**
Seeking instrumental support	1.98	0.75	1.57	0.68	1.93	0.75	**< 0.0001**
Getting engaged in another activity	1.71	0.74	1.50	0.88	1.69	0.76	0.0502
Denial	0.88	0.77	0.86	0.85	0.88	0.78	0.6596
Venting off	1.46	0.72	1.28	0.77	1.44	0.73	0.0561
Use of psychoactive substances	0.51	0.72	0.88	0.94	0.56	0.76	**0.0015**
Ceasing activity	0.84	0.72	1.04	0.73	0.87	0.72	**0.0302**
Self-accusation	1.45	0.80	1.33	0.72	1.44	0.79	0.3546

SD – standard deviation, p – level of statistical significance p = 0.05.

central value on the 0-3-point scale, i.e. 1.5 points) the following strategies were selected: venting off (1.44 ±0.73), self-accusation (1.44 ±0.79), turning to religion (1.31 ±0.95). To a limited extent, the participants were inclined to choose strategies associated with humour (1.09 ±0.73), denial (0.88 ±0.78), refraining (0.87 ±0.72), or using psychoactive substances (0.56 ±0.76).

Significant differences were shown between the sex of the participants and choice of strategy of dealing with difficult situations. It was shown that women more often than men actually chose strategies based on acceptance (1.83), and seeking emotional or instrumental support (respectively, 1.97 and 1.98). In difficult situations, men more often reached for psychoactive substances (0.88) or ceased their activity (1.04) (Table 2).

The age of the participants significantly affected their choice of seeking emotional and instrumental support and drug use or ceasing activity. It was shown that older people were less inclined to seek emotional and instrumental support (respectively, rho = –0.116 and rho = –0.118), while in difficult situations they more often reached for psychoactive substances (rho = –0.144) or refrained from their activity (rho = –0.108) (Table 3).

Significant statistical differences were shown between groups of participants and the choice of strategy of dealing with difficult situations. It was shown that paramedics (2.23) and midwives (2.19) more often actively managed difficult situations than physiotherapists (1.90). Similar differences occurred in case of choice of the planning strategy. The choice of a humour strategy was mostly preferred by physiotherapists (1.44) than by other participating groups. Paramedics were least inclined (0.93) to turn to religion. Physiotherapists were less inclined (1.73) to seek emotional support than nurses and midwives. Seeking instrumental support was slightly more often chosen by nurses and midwives. Physiotherapists chose denial more often (1.33) than other participants. This was also the group that more often reached for psychoactive substances (1.00) or refrained from activity (1.35) (Table 4).

It was shown that strategies of managing difficult situations based on helplessness were more often followed by older people (rho = 0.126, p = 0.002) (Figure 4).

Younger people were more inclined to choose strategies associated with seeking support (rho = –0.134, p = 0.001) (Figure 5).

The analysis of our own research allowed us to conclude that active management in difficult situations was the least selected by physiotherapists (1.78). This group more often than other groups displayed avoidance behaviours (1.48) and humour (1.44), and also was most frequently helpless (1.27). In difficult situations, midwives and nurses most often sought support (respectively, 2.05 and 1.97). Paramedics were the least inclined (0.93) to turn to religion (Table 5).

Significant statistical differences were shown between the stress levels and choice of strategy of dealing with difficult situations. Moreover, it was concluded that higher stress level is associated with increase

in interest in strategies based on denial, venting off, using psychoactive substances, refraining, and self-accusation. People with low results in experienced stress more often than people with high results in stressful situations applied strategies based on active management, positive revaluation, and acceptance (Table 6).

The level of self-efficacy significantly affected the choice of strategy for managing difficult situations by the participants. The greater the sense of self-efficacy in the participants, the more often they chose active stress management strategies, planning, positive revaluation, and acceptance. The lower the sense of self-efficacy in the participants, the more often they chose active stress management strategies, planning, positive revaluation, and acceptance. Participants with low or average results in the GSES scale more often chose turning to religion, as compared to people with high levels of self-efficacy (Table 7).

Table 3. Stress management strategies and age of the participants (n = 526)

Strategies – stress management		Age
Active management	rho	–0.057
	p	0.1792
Planning	rho	–0.060
	p	0.1563
Positive revaluation	rho	–0.007
	p	0.8722
Acceptance	rho	–0.031
	p	0.4565
Humour	rho	0.068
	p	0.1060
Turning to religion	rho	–0.060
	p	0.1523
Seeking emotional support	rho	–0.116
	p	**0.0058**
Seeking instrumental support	rho	–0.118
	p	**0.0052**
Engaging in another activity	rho	–0.041
	p	0.3328
Denial	rho	0.033
	p	0.4343
Venting off	rho	0.063
	p	0.1383
Use of psychoactive substances	rho	0.144
	p	**0.0006**
Ceasing activity	rho	0.108
	p	**0.0106**
Self-accusation	rho	0.022
	p	0.6073

Spearman's rho correlation coefficient; p – level of statistical significance p = 0.05.

Discussion

Stress is present in the entire formation period, and developing stress management skills is very important. Effective stress management allows one not only to reduce the experience of stress, but also to effectively cope with the environment in which professional competence is developed.

It was shown that stress is present in all the aspects of formation of medical students [8, 14, 17]. Almost half of the first-year students participating in our own research experienced intense stress. Similar conclusions were reached by Sun *et al.* and Bodys-Cupak *et al.* [18, 19]. However, the results of research conducted on Norwegian students showed that only one third of the participants experienced high or average stress levels [20]. Our own studies, however, showed that higher levels of stress were experienced by older students. Midwives and physiotherapists more often experienced average stress levels than other participating groups. Higher stress levels were experienced by women than by men. Similar results were obtained by other researchers [5, 17, 21, 22].

Some of the most common coping strategies identified by students include: family, social and spiritual support, exercising, problem solving, transference, avoidance, denial as well as smoking, drugs and alcohol [4, 9].

Our own research showed that students most often applied active management, planning, seeking instrumental and emotional support, and acceptance and least frequently turned to psychoactive substances. Women more often than men dealt with the situation by acceptance and seeking support. Men more often than women and older people more than young chose psychoactive substances or ceasing activity. It was shown that strategies of managing difficult situations based on helplessness were more often followed by older people. Younger people were more inclined to choose strategies associated with seeking support. Al-Dubai *et al.* showed that medical students adopted active coping strategies rather than avoidance [23]. Male students use active coping less, and alcohol or substance consumption more, than female students did. Older students used active coping, refraining, and planning more than younger students did. Żuralska *et al.* showed that in difficult situations nursery students more often that obstetrics students preferred a task-oriented approach and seeking social relations [24]. Whereas, midwives, as opposed to nurses, more

Table 4. Stress coping strategies and the group of participants (n = 526)

Group/strategies	Nursing		Obstetrics		Medical rescue		Physiotherapy		Total		*P*-value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Active management	2.05	0.63	2.19	0.57	2.23	0.56	1.90	0.71	2.06	0.63	**0.0052**
Planning	1.96	0.70	2.12	0.66	2.16	0.67	1.80	0.68	1.98	0.70	**0.0022**
Positive revaluation	1.69	0.73	1.76	0.71	1.63	0.73	1.64	0.71	1.68	0.72	0.5621
Acceptance	1.82	0.70	1.94	0.73	1.79	0.71	1.66	0.73	1.81	0.71	0.0605
Humour	1.05	0.73	0.96	0.63	0.90	0.63	1.44	0.74	1.09	0.73	**< 0.0001**
Turning to religion	1.30	0.97	1.43	0.99	0.93	1.00	1.46	0.74	1.31	0.95	**0.0014**
Seeking emotional support	1.96	0.72	2.08	0.74	1.78	0.77	1.73	0.76	1.92	0.74	**0.0042**
Seeking instrumental support	1.98	0.75	2.01	0.77	1.76	0.70	1.79	0.75	1.93	0.75	**0.0117**
Getting engaged in another activity	1.72	0.74	1.76	0.71	1.52	0.84	1.62	0.77	1.69	0.76	0.2367
Denial	0.87	0.76	0.68	0.68	0.44	0.61	1.33	0.78	0.88	0.78	**< 0.0001**
Venting off	1.48	0.72	1.33	0.76	1.26	0.64	1.50	0.76	1.44	0.73	0.0687
Use of psychoactive substances	0.46	0.73	0.38	0.65	0.56	0.66	1.00	0.83	0.56	0.76	**< 0.0001**
Ceasing activity	0.80	0.70	0.69	0.65	0.65	0.61	1.35	0.72	0.87	0.72	**< 0.0001**
Self-accusation	1.46	0.81	1.39	0.83	1.32	0.75	1.46	0.75	1.44	0.79	0.5350

SD – standard deviation, p – level of statistical significance p = 0.05, n – number of subjects.

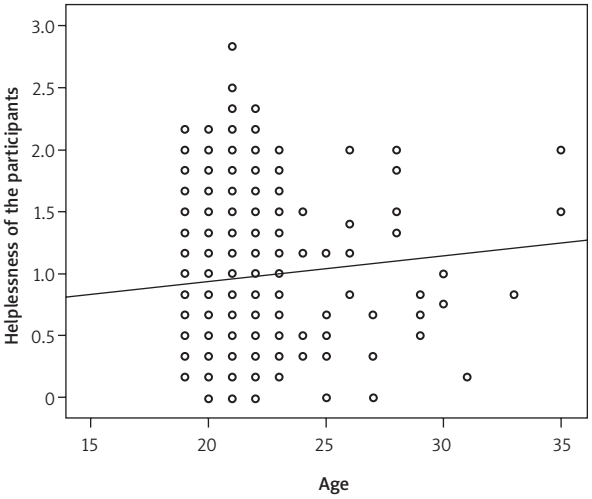

Figure 4. Age and helplessness of the participants

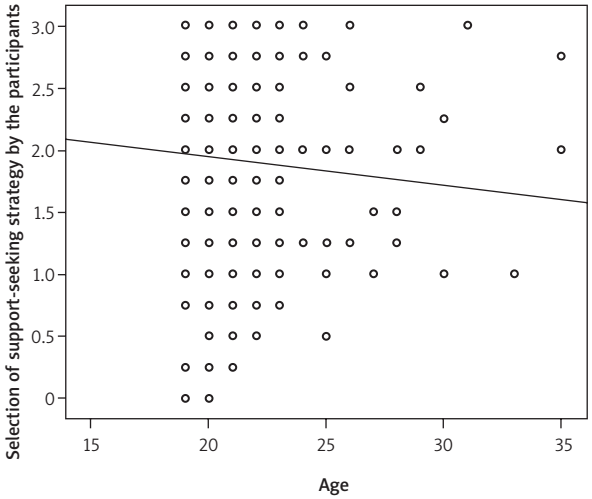

Figure 5. Age and selection of support-seeking strategy by the participants

often preferred to apply an approach focused on emotions.

Okumura *et al.* and Hirsch *et al.* concluded that avoidance behaviours allow students to deal with stress in their relations with patients [15, 25]. In our own research, students least often reached for psychoactive substances to deal with difficult situations. Similar results were obtained by Fornes-Vives *et al.* [26]. Using alcohol and smoking tobacco by medical students as a method of dealing with difficult situations was also confirmed by Ashton and Kamali [27].

Research by Bodys-Cupak *et al.* as well as that of Alzayyat and Al-Gamal also showed that students displaying avoidance behaviours experienced higher levels of stress than other participants [3, 5]. Jałtuszewska *et al.* and Nowicki *et al.* showed that a task-oriented approach to dealing with stress is representative of paramedic students [13, 14].

Table 5. General coping strategies and the group of participants (*n* = 526)

Group	Nursing		Obstetrics		Medical rescue		Physiotherapy		Total		*P*-value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Active management	1.90	0.53	2.02	0.52	2.01	0.47	1.78	0.53	1.91	0.53	**0.0012**
Helplessness	0.91	0.54	0.82	0.52	0.84	0.42	1.27	0.55	0.95	0.55	**< 0.0001**
Seeking support	1.97	0.67	2.05	0.68	1.77	0.68	1.76	0.66	1.92	0.68	**0.0023**
Avoidance behaviours	1.36	0.54	1.26	0.53	1.07	0.48	1.48	0.54	1.34	0.54	**0.0001**
Acceptation	1.82	0.70	1.94	0.73	1.79	0.71	1.66	0.73	1.81	0.71	0.0605
Humour	1.05	0.73	0.96	0.63	0.90	0.63	1.44	0.74	1.09	0.73	**< 0.0001**
Turning to religion	1.30	0.97	1.43	0.99	0.93	1.00	1.46	0.74	1.31	0.95	**0.0014**

SD – standard deviation, p – level of statistical significance p = 0.05, n – number of subjects.

Table 6. Coping strategies and level of perceived stress in the participants (*n* = 526)

PSS/Mini COPE	Low level		Average level		High level		Total		*P*-value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Active management	2.30	0.59	2.06	0.63	1.97	0.63	2.06	0.63	**< 0.0001**
Planning	2.25	0.65	1.94	0.67	1.88	0.71	1.98	0.70	**< 0.0001**
Positive revaluation	2.03	0.65	1.68	0.72	1.54	0.70	1.68	0.72	**< 0.0001**
Acceptance	2.07	0.66	1.76	0.71	1.73	0.71	1.81	0.71	**< 0.0001**
Humour	1.08	0.71	1.14	0.68	1.06	0.76	1.09	0.73	0.4829
Turning to religion	1.31	0.99	1.31	0.95	1.31	0.94	1.31	0.95	0.9886
Seeking emotional support	2.08	0.67	1.86	0.69	1.89	0.79	1.92	0.74	**0.0316**
Seeking instrumental support	2.02	0.71	1.91	0.75	1.90	0.76	1.93	0.75	0.4168
Getting engaged in another activity	1.64	0.76	1.66	0.73	1.72	0.77	1.69	0.76	0.5063
Denial	0.61	0.64	0.85	0.72	1.00	0.83	0.88	0.78	**0.0001**
Venting off	1.26	0.68	1.37	0.74	1.56	0.72	1.44	0.73	**0.0002**
Use of psychoactive substances	0.31	0.49	0.57	0.76	0.65	0.82	0.56	0.76	**0.0007**
Ceasing activity	0.54	0.58	0.84	0.75	1.02	0.72	0.87	0.72	**< 0.0001**
Self-accusation	1.11	0.69	1.38	0.74	1.61	0.82	1.44	0.79	**< 0.0001**

SD – standard deviation, p – level of statistical significance p = 0.05, n – number of subjects.

Moreover, it was concluded that higher stress level is associated with an increase in interest in strategies based on denial, venting off, using psychoactive substances, refraining, and self-accusation. Similarly, Yildiz Findik *et al.* observed that stress levels were higher in nursing students manifesting passive coping strategies [28]. Results of research by Özdemir and Kaya showed that stress management strategies in students of nursing and obstetrics influenced their communication skills [29].

Our own research showed that over half of the participants experienced a high sense of self-efficacy. Older people had a weaker sense of self-efficacy than other participants. The sense of self-efficacy influenced the perception of a difficult situation and choice of strategy of stress management. The sense of self-efficacy in the Polish participants was a significant factor determining preferred stress management strategies [5]. People with a higher sense of self-efficacy experienced low levels of stress and significantly more often chose the following strategies in difficult situations: active management, planning, positive revaluation, acceptance, and seeking emotional support. Khater *et al.* claimed that appropriate levels of sense of self-efficacy in students may in practice help them in their practice in various clinical domains and to accept a demanding role [21].

The main limitation of this study is that data collection only occurred at one point in time, rather than longitudinally. Also, the participants in the study

Table 7. Coping strategies and self-efficacy of the participants (n = 526)

GSES/MiniCOPE	Low level		Average level		High level		Total		*P*-value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Active management	1.56	0.66	1.99	0.52	2.20	0.64	2.06	0.63	**< 0.0001**
Planning	1.59	0.60	1.89	0.63	2.10	0.72	1.98	0.70	**< 0.0001**
Positive revaluation	1.37	0.76	1.54	0.65	1.83	0.72	1.68	0.72	**< 0.0001**
Acceptance	1.55	0.78	1.67	0.68	1.94	0.69	1.81	0.71	**< 0.0001**
Humour	0.98	0.80	1.05	0.71	1.13	0.72	1.09	0.73	0.1486
Turning to religion	1.35	0.82	1.45	0.92	1.21	0.98	1.31	0.95	**0.0149**
Seeking emotional support	1.73	0.80	1.91	0.74	1.96	0.73	1.92	0.74	0.0902
Seeking instrumental support	1.75	0.73	1.98	0.76	1.93	0.74	1.93	0.75	0.1144
Getting engaged in another activity	1.50	0.82	1.68	0.74	1.73	0.75	1.69	0.76	0.0968
Denial	1.27	0.77	0.97	0.77	0.75	0.76	0.88	0.78	**< 0.0001**
Venting off	1.61	0.69	1.48	0.69	1.38	0.75	1.44	0.73	0.0567
Use of psychoactive substances	0.91	0.77	0.63	0.82	0.45	0.69	0.56	0.76	**< 0.0001**
Ceasing activity	1.31	0.68	1.04	0.72	0.68	0.67	0.87	0.72	**< 0.0001**
Self-accusation	1.80	0.79	1.54	0.79	1.31	0.77	1.44	0.79	**< 0.0001**

SD – standard deviation, p – level of statistical significance p = 0.05.

were mainly young women, which could potentially cause a bias. Further research that includes preceptors, staff nurses, and instructors is recommended in order to reveal the true image of the students' level of competences, and it should also be undertaken in multiple universities.

Conclusions

The level of sense of self-efficacy determines active stress management strategies in medical students exposed to stress. Almost half of the students experienced high levels of stress, and over half of them manifested high levels of self-efficacy.

The participants dealt with difficult situations mainly by active management, planning, and seeking instrumental support. In difficult situations, the paramedics and the midwives more often turned to active management than physiotherapists. Younger people were more inclined to choose strategies associated with seeking support. It was also shown that strategies of managing difficult situations based on helplessness were more often followed by older people.

This study indicates a need for stress management programmes in medical colleges. Educators need to provide appropriate support to students in both the clinical and academic environment. More studies are needed to identify and compare which interventions are effective in supporting students to cope with stress during their undergraduate education.

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Conflict of interest

The authors declare no conflict of interest.

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